

Salmonellosis

Agent: *Salmonella* (bacteria)

Mode of Transmission: Ingestion of food or drinking water contaminated with animal feces. Infected persons can spread the bacteria to other persons by not washing their hands properly after going to the bathroom and then handling food that others will eat. Infection can also occur after eating, smoking, or touching one's mouth if hands are contaminated with the bacteria and not washed well. People can also be infected with *Salmonella* by the feces of some pets, including reptiles and young birds, if hands are not washed well after contact with sick or seemingly healthy infected animals.

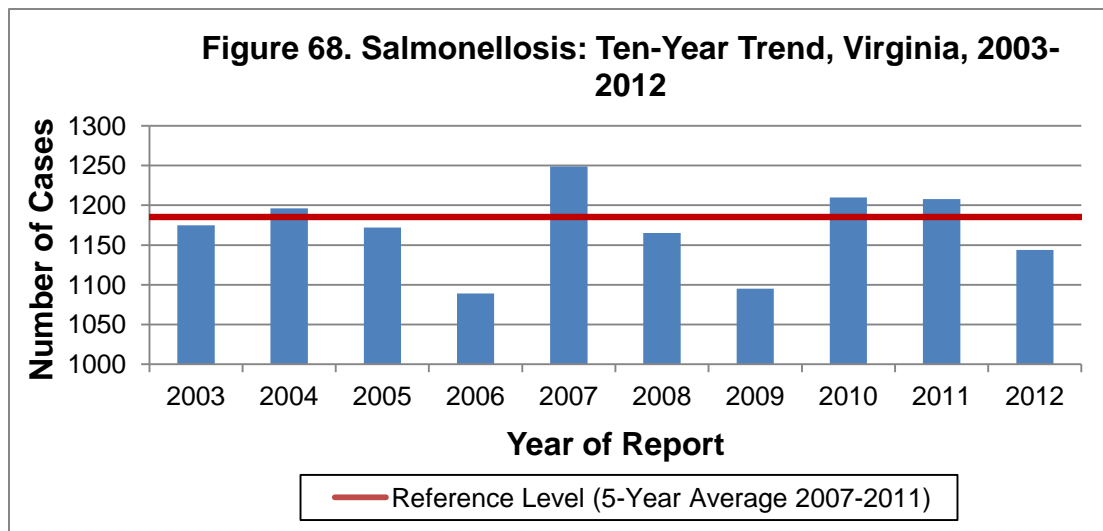
Signs/Symptoms: Sudden onset of headache, fever, abdominal pain, diarrhea and sometimes vomiting. Dehydration, especially in older adults and young children, can be a severe complication.

Prevention: Preventive measures should include following proper sanitation methods for food preparation and water supplies, including preventing cross-contamination of food preparation surfaces, maintaining sanitary sewage disposal, excluding infected people from handling food or providing healthcare, prohibiting the sale of small turtles and restricting the sale of other reptiles for pets, and observing proper hand hygiene, including washing hands after toileting or diapering, before and after handling food, and after handling animals or their feces. Eggs and other animal food products should be cooked thoroughly.

Other Important Information: With approximately 42,000 salmonellosis cases reported each year in the United States, *Salmonella* is one of the leading pathogens that cause foodborne illnesses and result in hospital admissions. The incidence rate is highest among infants and young children. Mortality rates are higher in infants, older adults and people with impaired immune systems.

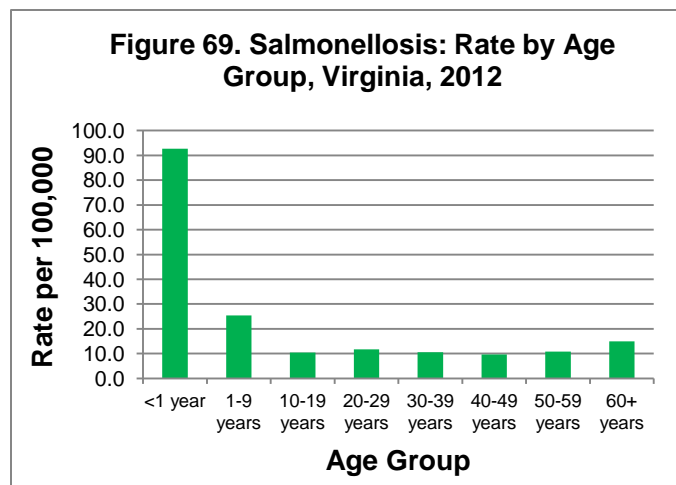
Special Note about Salmonellosis: While more than 2,500 serotypes of *Salmonella* can cause human illness, two specific *Salmonella* serotypes (*S. Typhi* and *S. Paratyphi**) can lead to typhoidal illness (i.e., typhoid fever and paratyphoid fever, respectively). Typhoidal illness is found only in humans and often results in more serious infections than those seen in other *Salmonella* serotypes; up to 10% of people who are untreated for typhoidal illness may die. Cases of typhoid fever and paratyphoid fever are usually associated with foreign travel and are alike in regard to clinical features and measures necessary to control the spread of infection. However, despite their similarities, paratyphoid fever tends to be milder than typhoid fever, with a lower fatality rate. Due to its severity, typhoid fever is reported as a separate condition in Virginia (see the Typhoid Fever section of this report for more information), while cases of paratyphoid fever are included in the general salmonellosis report.

*Paratyphoid fever can be caused by any of three separate strains of *S. Paratyphi*: *S. Paratyphi* A, *S. schottmuelleri* (also called *S. Paratyphi* B), or *S. hirschfeldii* (also called *S. Paratyphi* C). A separate strain of *S. Paratyphi* B (i.e., *S. Paratyphi* B var. L[+] tartrate [+]) causes illness that resembles non-typhoidal salmonellosis; these cases are treated as general salmonellosis and are not considered to be paratyphoid fever.

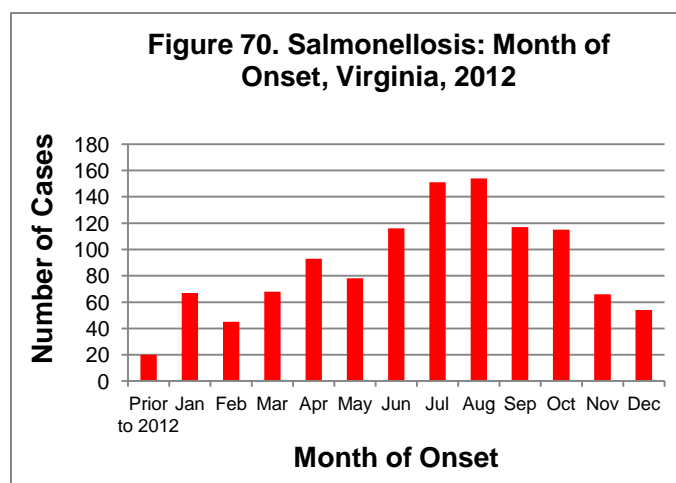


The 1,144 cases of salmonellosis reported in Virginia in 2012 is lower than the 1,208 cases reported in 2011, and represents a 4% decrease from the five-year average of 1,185.4 cases per year (Figure 68).

By far, infants were at the greatest risk for *Salmonella* infection (92.7 cases per 100,000), followed by children aged 1-9 years (25.4 per 100,000) (Figure 69). Incidence rates in the other age groups were much lower, ranging from 9.6 to 15.0 per 100,000. Race information was missing for 42% of all cases; among cases with race reported, incidence was higher in the white population (9.2 per 100,000) than the black and “other” race populations (6.5 and 3.2 per 100,000, respectively). Females were reported to be infected with *Salmonella* more frequently than males (14.8 and 13.0 per 100,000, respectively).



Regionally, the highest incidence rate was seen in the eastern health planning region (17.3 per 100,000). The lowest rate was seen in the northern region (10.4 per 100,000). *Salmonella* infections peaked during the third quarter of 2012, with 37% of cases occurring between July and September (Figure 70). Only one person reported to have *Salmonella* infection was known to have died in Virginia during 2012.



Thirteen confirmed salmonellosis outbreaks occurred during 2012. Eight foodborne outbreaks of salmonellosis were reported; the number of Virginia residents affected during each outbreak ranged from 1 to 34. Three outbreaks were associated with zoonotic exposures, with two to nine Virginia cases per outbreak. The animal exposures identified during these outbreaks included turtles and live poultry (e.g., chicks, ducklings, and partridges). Two other salmonellosis outbreaks were reported during 2012; the method of transmission could not be identified for one, while the remaining outbreak was linked to contaminated dog food. Nine of the *Salmonella* outbreaks involving Virginia residents in 2012 were multi-state outbreaks. See the Outbreaks section of this report for more information.

Illnesses identified during the 2012 salmonellosis outbreaks were attributed to several *Salmonella* serotypes; during some outbreaks, more than one *Salmonella* serotype was detected. The serotypes involved included Bareilly, Braenderup, Bredeney, Enteritidis, Heidelberg, Infantis, Javiana, Mississippi, Montevideo, Nchanga, Newport, Pomona, Poona, Sandiego, and I 4,[5],12:i:-. For all salmonellosis infections among Virginia residents during 2012, the most commonly detected serotypes were *Salmonella* ser. Enteritidis and *Salmonella* ser. Typhimurium (Table 11).

Table 11. Top Ten *Salmonella* Serotypes Reported to the CDC PulseNet System by the Division of Consolidated Laboratory Services, Virginia, 2012

Rank	Serotype Causing Infection	Number	Rank	Serotype Causing Infection	Number
1	<i>S. ser</i> Enteritidis	239	6	<i>S. ser</i> I 4,[5],12:i:-	34
2	<i>S. ser</i> Typhimurium	191	7	<i>S. ser</i> Saintpaul	28
3	<i>S. ser</i> Newport	117	8	<i>S. ser</i> Infantis	19
4	<i>S. ser</i> Javiana	87	9	<i>S. ser</i> Braenderup	18
5	<i>S. ser</i> Bareilly	58	10	<i>S. ser</i> Heidelberg	18

Three cases of paratyphoid fever (all *S. Paratyphi* A) were reported in Virginia during 2012, down from the 16 cases identified in 2011 and the 12 cases reported in 2010. All three affected individuals had a history of international travel in the weeks prior to illness onset; two case-patients had traveled to India and one had visited Pakistan shortly before becoming ill.